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Studies on the Cell Wall Digestibility in Pigs Fed Leucaena (*Leucaena leucophala* (Lam.) de Wit) Leaf Meal

[1]Consuelo Díaz, [2]F. Grageola, [2]C. Lemus and J. [2]Ly
[1]Swine Research Institute, P.O. Box 1, Punta Brava, Havana, Cuba
[2]Facultad de Medicina Veterinaria y Zootecnia, Universidad Autónoma de Nayarit,
Ciudad Universitaria Amado Nervo, Tepic, CP 63190. Nayarit, México

Abstract: Six crossbred castrate male pigs weighing on average 55 kg each were randomly allocated to 3 diets according to a duplicate 3×3 Latin square design to study digestion characteristics of cell wall fractions as determined by 0, 10 and 20% sun-dried leucaena (*Leucaena leucocephala* Lam. de Wit) Leaf Meal (LM) in diets based on sugar cane molasses type B and soybean meal. A significant ($p<0.01$) decrease in lignin and cell content (1-NDF) digestibility was observed by increasing the level of LM in the diet. There was no treatment effect on digestibility of crude fibre and other detergent fractions of fibre. A significant interdependence was found between faecal fresh material output and WHC ($p<0.001$, $R^2 = 0.896$). It could be suggested that a moderate increase in LM up to 20% in the diet, should not determine a marked, deleterious effect on fibrous fraction digestibility as measured at the rectal site of growing pigs.

Key words: Leucaena leaf meal, cell wall, digestibility, pig, cell content, water holding capacity, digesta flow

INTRODUCTION

The use of alternative sources of nitrogen for pigs is an important objective of research. In this connection *Leucaena leucocephala* (Lam.) de Witt is a tropical shrub which should be used for feeding pigs as a source of nitrogen (Pérez, 1997). Although, the digestion of leucaena fibre and its effect on digesta flow has not been thoroughly studied in pigs, some digestibility trials have suggested that the fibre content of Leucaena Meal (LM) is likely to be the main constraint for an efficient utilization of this type of feed (Santos and Abreu, 1995). On the other hand it is also known that sugar cane molasses are poor in cell wall and protein nitrogen. In this regard, the adverse effects associated with the presence of high amount of fibre in the diet may no be a serious problem for pigs fed this type of diet.

The aim of the present research was to study some characteristics of the digestion of several fibre fractions and the digesta flow in pigs, fed graded level of leucaena foliage meal.

MATERIALS AND METHODS

The LM was obtained after cutting branches from a leucaena plantation (cv, ipil-ipil). The branches were chopped, spread over a plate and sun dried for 3-4 days. As a result of a natural shedding process, only dry leucaena leaves were collected, therefore discarding all type of stalks. Sugar cane molasses type B was obtained from a Cuban sugar factory, Havana and resulted from the second sugar extraction, after a clarifying process conducted with a Cuban natural zeolite (Macías and Ly, 1995). Three diets were formulated with soybean meal, sugar cane molasses type B and different levels of LM. The composition and nutritive value of the experimental diets is presented in Table 1.

Table 1: Characteristics of the experimental diets

	Leucaena leaf meal in diet (%)		
Ingredients (%)	0	10	20
Soybean meal	30.2	24.5	20.7
Sugar cane molasses type B	66.3	61.9	56.1
Leucaena leaf meal	0	10.0	20.0
Premix[1]	3.5	3.6	3.2
Chemical composition (% dry basis)			
Organic matter	95.3	95.8	96.3
Crude protein	14.0	13.9	13.9
WHC[2], g kgG[1] DM	1.51	2.18	3.03
Digestibility (%)			
Dry matter	82.3	82.9	84.6
Organic matter	95.3	95.8	96.3

[1] Content (kg^{-1}); vitamin A, 600 IU; vitamin D_3, 160 IU; vitamin E, 10 mg; vitamin B_1, 2 mg; vitamin B_2, 3 mg; vitamin B_6, 15 mg; vitamin B_{12}, 0.025 mg; panthotenic acid, 5 mg; choline chloride, 300 mg; menadione sodium bisulphate, 2 mg; folic acid, 0.5 mg; cobalt, 0.4 mg; iron, 10 mg; iodine, 0.5 mg, [2]WHC, water holding capacity

Corresponding Author: C. Lemus, Facultad de Medicina Veterinaria y Zootecnia, Universidad Autónoma de Nayarit, Ciudad Universitaria Amado Nervo, Tepic, CP 63190, Nayarit, México